

CLEAN CLAIMS
APPLICATION NO. 09/954,464

CLAIMS

1. An open frame display shelf assembly for connection with vertical supports spaced apart a bay width, comprising:

5 at least two spaced apart parallel elongate base rods extending substantially co-extensive with said bay width;

an array of rod beams fixed in transverse relationship to said base rods, and positioned in parallel, mutually spaced relationship a distance selected to provide an open frame surface for supporting merchandise, each said rod beam
10 extending between a shelf forward region and a shelf rearward region, and said array extending substantially along said bay width between first and second shelf side regions, said rod beams having forward extensions arranged normally to said open frame surface, extending a forward wall height at said shelf forward region, said rod beams having rearward extensions arranged normally to said open frame
15 surface a rearward wall height at said shelf rearward region;

a plurality of elongate forward wall forming rods arranged in parallel relationship with said base rods and fixed to oppositely disposed portions of said rod beam forward extensions to define a forward receptor gap;

a plurality of elongate rearward wall forming rods arranged in parallel
20 relationship with said base rods and fixed to oppositely disposed portions of said rod beam rearward extensions to define a rearward receptor gap;

a plurality of first side load transfer rods fixed to said rod beams at said first shelf side region, having first side wall extensions arranged normally to said open frame surface and extending a first sidewall height;

25 a plurality of first sidewall forming rods arranged in parallel relationship with said rod beams and fixed to oppositely disposed portions of said load transfer rod first sidewall extensions to define a first side receptor gap;

a plurality of second side load transfer rods fixed to said rod beams at said shelf second side region and having second sidewall extensions arranged
30 normally to said open frame surface and extending a second sidewall height;

a plurality of second sidewall forming rods arranged in parallel relationship with said rod beams and fixed to oppositely disposed portions of said load transfer rod second sidewall extensions to define a second side receptor gap;

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a first bracket assembly connectable with a first of said vertical supports and fixed to said first sidewall forming rods for effecting the support thereof from a first of said vertical supports at predetermined angles with respect thereto; and

a second bracket assembly connectable with a second one of said vertical supports and fixed to said second sidewall forming rods for effecting the support thereof from said second vertical support at said predetermined angles.

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5 11. The open frame display shelf assembly of claim 48 in which:
said display support has front and back faces, said first channel assembly is formed as a dual channel assembly having a forward channel at said front face and a rearward channel at said rear face and including a channel containing engagement member positioned in spaced relationship from said rearward channel; and

10 said pivot connector includes a connector channel slidably engageable with said rearward channel and including a stabilizer tab engageable with said engagement member.

15 15. The open frame display shelf assembly of claim 14 in which:
each aperture of said first array of attitude defining apertures and each aperture of said second array of pairs of second apertures has a principal dimension of about one-fourth inch; and
said radius distance, r_1 , is within a range of about one to two and one-half inches.

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20 16. The open frame display shelf assembly of claim 14 in which said second angle, θ_2 , has a value which is a multiple of said first angle θ_1 .

25 17. The open frame display shelf assembly of claim 14 in which:
said first adjusting component includes a third array of attitude defining third apertures regularly spaced apart along a third arcuate locus positioned a radius distance, r_2 , of value less than said radius, r_1 , from the center of said first pivot aperture, adjacent said attitude defining third apertures being symmetrically disposed

about third radii of said third arcuate locus located intermediate said first radii and defining said first angle θ_1 ;

said second adjusting component includes a fourth array of pairs of fourth apertures positioned along a fourth arcuate locus, located a said radius distance, r_2 , from the center of said second pivot aperture and disposed co-radially with said pairs of second apertures;

said second connector is insertable through a said third attitude defining aperture of said third array and a fourth aperture of a given pair within said fourth array aligned with said third attitude defining aperture; and

said third connector is insertable through a said third attitude defining aperture of said third array and a said fourth aperture of said given pair of said fourth array.

25. The open frame shelf assembly of claim 49 in which:

said display support has front and back faces, said first channel assembly is formed as a dual channel assembly having a forward channel at said front face and a rearward channel at said rear face and including a channel containing engagement member positioned in spaced relationship from said rearward channel; and

said pivot connector includes a connector channel slidably engageable with said rearward channel and including a stabilizer tab engageable with said engagement member.

27. A display shelf system wherein shelves from uppermost to lowermost are connectable with vertical supports spaced apart a bay width, comprising:

a plurality of shelves, each comprising:
at least three spaced apart parallel elongate base rods, including two forward base rods extending substantially co-extensive with said bay width;

an array of rod beams fixed in transverse relationship to said base rods, and positioned in parallel, mutually spaced relationship a distance selected to provide an open frame surface for supporting merchandise, each said rod beam extending between a shelf forward region and a shelf rearward region, and said array extending to define a shelf depth substantially along said bay width between first and second shelf side regions, said rod beams having forward extensions

arranged normally to said open frame surface extending a forward wall height at said shelf forward region to define sign contact surfaces, said rod beams having rearward extensions arranged normally to said open frame surface a rearward wall height at said shelf rearward region;

5 at least two elongate forward wall forming rods arranged in parallel relationship with said base rods and fixed to said rod beam forward extensions to define therewith a forward wall;

10 a plurality of elongate rearward wall forming rods arranged in parallel relationship with said base rods and fixed to said rod beam rearward extensions to define therewith a rearward wall;

a plurality of first side load transfer rods fixed to said rod beams at said first shelf side region, having first side wall extensions arranged normally to said open frame surface and extending a first sidewall height;

15 a plurality of first sidewall forming rods arranged in parallel relationship with said rod beams and fixed to said load transfer rod first sidewall extensions to define a first side wall;

a plurality of second side load transfer rods fixed to said rod beams at said shelf second side region and having second sidewall extensions arranged normally to said open frame surface and extending a second sidewall height;

20 a plurality of second sidewall forming rods arranged in parallel relationship with said rod beams and fixed to said load transfer rod second sidewall extensions to define a second side wall;

25 a first bracket assembly connectable with a first of said vertical supports and fixed to said first sidewall forming rods for effecting the support of said shelf surface, from a first of said vertical supports at predetermined angles with respect to horizontal;

30 a second bracket assembly connectable with a second one of said vertical supports and fixed to said second sidewall forming rods for effecting the support of said shelf surface from said second vertical supports at said predetermined angles; and

a plurality of sign support assemblies, each sign support assembly having an upper edge and a lower edge spaced therefrom a display width, having an inner surface and an outer display surface, having an effective length corresponding

with said bay width, and including a connector assembly extending from said upper edge and pivotally engaged with a select one of said forward base rods;

one each of said sign support assembly being pivotally coupled with a said shelf of said system from uppermost to a shelf adjacent said lowermost shelf; and

said sign support assemblies having a said display width of dimension effective to effect contact of said inner surface thereof with the said sign contact surface of a next adjacent lower shelf of said system.

10 32. The display shelf system of claim 50 in which:

said display support has front and back faces, said first channel assembly is formed as a dual channel assembly having a forward channel at said front face and a rearward channel at said rear face and including a channel containing engagement member positioned in spaced relationship from said rearward channel; and

said pivot connector includes a connector channel slidably engageable with said rearward channel and including a stabilizer tab engageable with said engagement member.

20 44. The display shelf assembly of claim 43 in which:

said coupler periphery is configured having a sequence of notches each with a notch shape for receiving a said forward wall forming rod, and said coupler having a centrally disposed opening extending therethrough; and

25 said coupler being retainable against said two wall forming rods by a flexible strap retainer extending through said centrally disposed opening and about at least one of said two wall forming rods.

Newly Added Claims

48. An open frame display shelf assembly for connection with vertical supports spaced apart a bay width, comprising:

at least three spaced apart parallel elongate base rods extending substantially co-extensive with said bay width;

an array of rod beams fixed in transverse relationship to said base rods, and positioned in parallel, mutually spaced relationship a distance selected to provide an open frame surface for supporting merchandise, each said rod beam extending between a shelf forward region and a shelf rearward region, and said array extending substantially along said bay width between first and second shelf side regions, said rod beams having forward extensions arranged normally to said open frame surface, extending a forward wall height at said shelf forward region, said rod beams having rearward extensions arranged normally to said open frame surface a rearward wall height at said shelf rearward region;

a plurality of elongate forward wall forming rods arranged in parallel relationship with said base rods and fixed to oppositely disposed portions of said rod beam forward extensions to define a forward receptor gap;

a plurality of elongate rearward wall forming rods arranged in parallel relationship with said base rods and fixed to oppositely disposed portions of said rod beam rearward extensions to define a rearward receptor gap;

a plurality of first side load transfer rods fixed to said rod beams at said first shelf side region, having first side wall extensions arranged normally to said open frame surface and extending a first sidewall height;

a plurality of first sidewall forming rods arranged in parallel relationship with said rod beams and fixed to oppositely disposed portions of said load transfer rod first sidewall extensions to define a first side receptor gap;

a plurality of second side load transfer rods fixed to said rod beams at said shelf second side region and having second sidewall extensions arranged normally to said open frame surface and extending a second sidewall height;

a plurality of second sidewall forming rods arranged in parallel relationship with said rod beams and fixed to oppositely disposed portions of said load transfer rod second sidewall extensions to define a second side receptor gap;

a first bracket assembly connectable with a first of said vertical supports and fixed to said first sidewall forming rods for effecting the support thereof from a first of said vertical supports at predetermined angles with respect thereto;

a second bracket assembly connectable with a second one of said vertical supports and fixed to said second sidewall forming rods for effecting the support thereof from said second vertical support at said predetermined angles;

said at least three said parallel elongate base rods including two forward base rods which are positioned in spaced adjacency with said shelf forward region and located for the pivotal support of a forwardly sloping sign support assembly;

a sign support assembly pivotally supported from a select one of said forward base rods, having a given length and a display width of dimension effective to contact the forward region of a mutually next adjacent lower said shelf assembly mounted upon said vertical supports to effect a sloping orientation for promoting visualization from an eye station remote from said shelf assembly, said sign support assembly further comprising;

a flat visual display support having a widthwise dimension corresponding with said display width, and extending between upper and lower edges, having a given length parallel with said base rods and configured with first and second channel assemblies extending along said given length; and

a pivot connector extending from said display support upper edge and including a pivot hook pivotally engageable with a select said forward base rod.

49. An open frame display shelf assembly for connection with vertical supports spaced apart a bay width, comprising:

at least three spaced apart parallel elongate base rods extending substantially co-extensive with said bay width;

an array of rod beams fixed in transverse relationship to said base rods, and positioned in parallel, mutually spaced relationship a distance selected to provide an open frame surface for supporting merchandise, each said rod beam extending between a shelf forward region and a shelf rearward region, and said array extending substantially along said bay width between first and second shelf side regions, said rod beams having forward extensions arranged normally to said open frame surface, extending a forward wall height at said shelf forward region,

said rod beams having rearward extensions arranged normally to said open frame surface a rearward wall height at said shelf rearward region;

a plurality of elongate forward wall forming rods arranged in parallel relationship with said base rods and fixed to oppositely disposed portions of said rod beam forward extensions to define a forward receptor gap;

a plurality of elongate rearward wall forming rods arranged in parallel relationship with said base rods and fixed to oppositely disposed portions of said rod beam rearward extensions to define a rearward receptor gap;

a plurality of first side load transfer rods fixed to said rod beams at said first shelf side region, having first side wall extensions arranged normally to said open frame surface and extending a first sidewall height;

a plurality of first sidewall forming rods arranged in parallel relationship with said rod beams and fixed to oppositely disposed portions of said load transfer rod first sidewall extensions to define a first side receptor gap;

a plurality of second side load transfer rods fixed to said rod beams at said shelf second side region and having second sidewall extensions arranged normally to said open frame surface and extending a second sidewall height;

a plurality of second sidewall forming rods arranged in parallel relationship with said rod beams and fixed to oppositely disposed portions of said load transfer rod second sidewall extensions to define a second side receptor gap;

first and second bracket assemblies connectable with respective, spaced apart said vertical supports and respective first and second sidewall forming rods, each said bracket assembly comprising:

a first generally flat adjusting component having a connector side connectable with one said vertical support, having a first pivot aperture, a first array of attitude defining first apertures regularly spaced apart along a first arcuate locus positioned a radius distance, r_1 , from the center of said first pivot aperture, adjacent said attitude defining first apertures being symmetrically disposed about first radii of said first arcuate locus defining a first angle θ_1 ,

a second generally flat adjusting component fixed to first or second said sidewall forming rods, positioned in slidable adjacency with said first flat adjusting component, having a second pivot aperture aligned with said first pivot aperture, having a second array of pairs of second apertures positioned along a second arcuate locus located a said radius distance, r_1 , from the center of said

second pivot aperture, each aperture of said pair of said second apertures being symmetrically disposed about second radii of said second locus defining a second angle θ_2 , corresponding with a predetermined dual connector position spacing;

5 a first connector insertable in pivot defining relationship through said first and second pivot apertures to pivotally connect said first and second flat adjusting components,

a second connector insertable through a said first aperture of said first array and a said second aperture of a given pair within said second array aligned with said first aperture.

10 a third connector insertable through a said first aperture of said first array and a said second aperture of said given pair of said second array;

said at least three said parallel elongate base rods including two forward base rods which are positioned in spaced adjacency with said shelf forward region and located for the pivotal support of a forwardly sloping sign support assembly;

15 a sign support assembly pivotally supported from a select one of said forward base rods, having a given length and a display width of dimension effective to contact the forward region of a mutually next adjacent lower said shelf assembly mounted upon said vertical support to effect a sloping orientation for promoting visualization from an eye station remote from said shelf assembly, said sign support assembly further comprising;

20 a flat visual display support having a widthwise dimension corresponding with said display width, and extending between upper and lower edges, having a given length parallel with said base rods and configured with first and second channel assemblies extending along said given length; and

25 a pivot connector extending from said display support upper edge and including a pivot hook pivotally engageable with a select said forward base rod.

50. A display shelf system wherein shelves from uppermost to lowermost are connectable with vertical supports spaced apart a bay width, comprising:

a plurality of shelves, each comprising:

at least three spaced apart parallel elongate base rods, including two forward base rods extending substantially co-extensive with said bay width;

an array of rod beams fixed in transverse relationship to said base rods, and positioned in parallel, mutually spaced relationship a distance selected to provide an open frame surface for supporting merchandise, each said rod beam extending between a shelf forward region and a shelf rearward region, and said array extending to define a shelf depth substantially along said bay width between first and second shelf side regions, and rod beams having forward extensions arranged normally to said open frame surface extending a forward wall height at said shelf forward region to define sign contact surfaces, said rod beams having rearward extensions arranged normally to said open frame surface a rearward wall height at said shelf rearward region;

at least two elongate forward wall forming rods arranged in parallel relationship with said base rods and fixed to said rod beam forward extensions to define therewith a forward wall;

a plurality of elongate rearward wall forming rods arranged in a parallel relationship with said base rods and fixed to said rod beam rearward extensions to define therewith a rearward wall;

a plurality of first side load transfer rods fixed to said rod beams at said first shelf side region, having first side wall extensions arranged normally to said open frame surface and extending a first sidewall height;

a plurality of first sidewall forming rods arranged in parallel relationship with said rod beams and fixed to said load transfer rod first sidewall extensions to define a first side wall;

a plurality of second side load transfer rods fixed to said rod beams at said shelf second side region and having second sidewall extensions arranged normally to said open frame surface and extending a second sidewall height;

a plurality of second sidewall forming rods arranged in parallel relationship with said rod beams and fixed to said load transfer rod second sidewall extensions to define a second sidewall ;

a first bracket assembly connectable with a first said vertical support and fixed to said first sidewall forming rods for effecting the support of said shelf surface, from a first of said vertical supports at predetermined angles with respect to horizontal;

a second bracket assembly connectable with a second one of said vertical supports and fixed to said second sidewall forming rods for effecting the

support of said shelf surface from said second vertical supports as said predetermined angles;

a plurality of sign support assemblies, each sign support assembly having an upper edge and a lower edge spaced therefrom a display width, having an inner surface and an outer display surface, having an effective length corresponding with said bay width, and including a connector assembly extending from said upper edge and pivotally engaged with a select one of said forward base rods;

one said sign support assembly being pivotally coupled with a said shelf of said system from uppermost to a shelf adjacent said lowermost shelf;

said sign support assemblies having a said display width of dimension effective to effect contact of said inner surface thereof with the said sign contact surface of a next adjacent lower shelf of said system.

a flat visual display support having a widthwise dimension corresponding with said display width, and extending between upper and lower edges, having a given length parallel with said base rods and configured with first and second channel assemblies extending along said given length; and

a pivot connector extending from said display support upper edge and including a pivot hook pivotally engageable with a select said forward base rod.